

HLJ
Review
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29 March 2011



Helsinki Region Transport System Plan (HLJ 2011)

Impact Assessment Abstract





HLJ 2011 plan and its impact assessment

The Helsinki Region Transport System Plan (HLJ 2011) is a strategic, long-term plan that aligns regional transport policy. HLJ 2011 is prepared as a joint project of the entire Helsinki region (14 municipalities) (Fig.1). The plan outlines transport system development up to 2050. The impact assessment of the Helsinki Region Transport System Plan (HLJ 2011) was conducted along with the preparation of the plan. The assessment supported the preparation of the plan and the related interaction and decision-making.

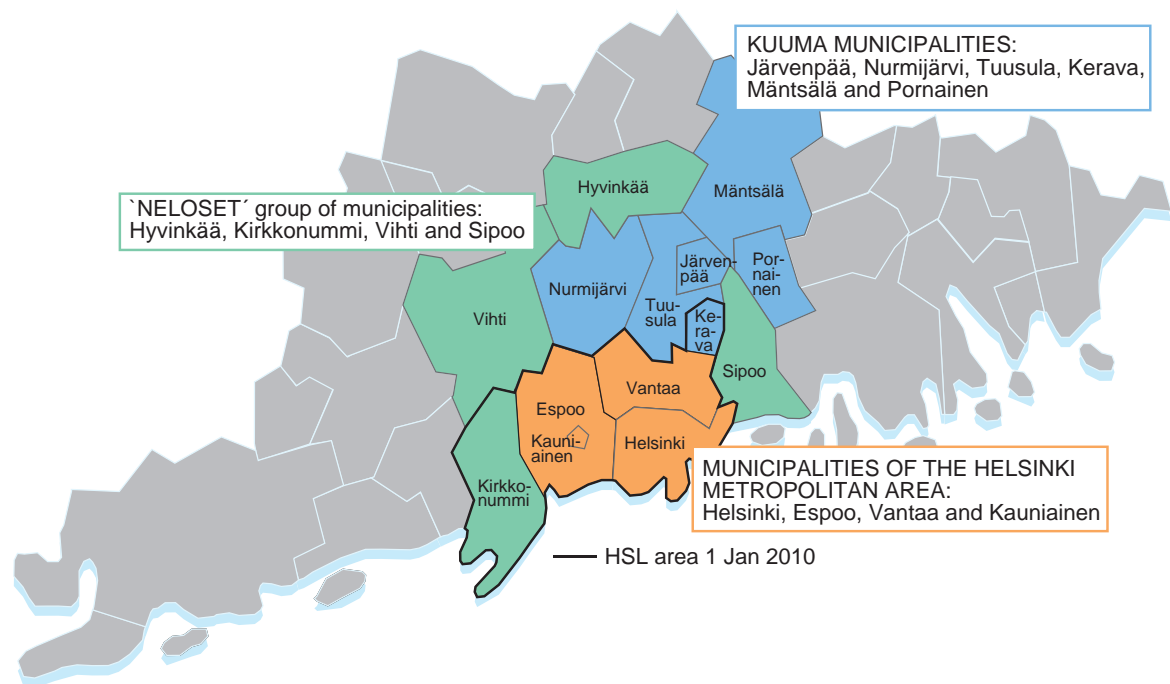


Fig. 1. The planning area of HLJ 2011.

The framework program approved by the Executive Board of YTV on 13 June 2008 and the HLJ 2011 vision and key goals approved by the HLJ Committee on 3 June 2009 served as starting points for the preparation of the plan and the impact assessment. The goals of HLJ 2011 were formed on the basis of studies made on the state of the transport system and regional development, as well as societal goals.

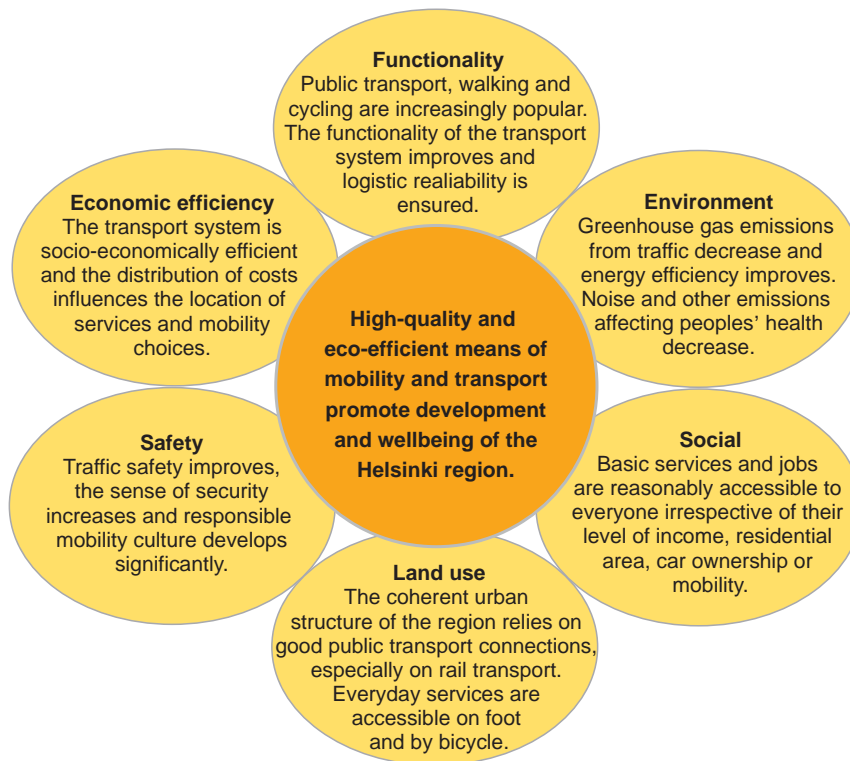


Fig. 2. HLJ 2011 vision.

Sector	Key goal
Economic efficiency	1. The socio-economic efficiency of transport improves 2. The economic efficiency of public transport improves
Functionality	3. The competitiveness of public transport relative to the car improves 4. Conditions for walking and cycling improve 5. Congestion does not impede the movement of goods transport
Environment	6. Greenhouse gas emissions from traffic decrease on target 7. Exposure to traffic emissions and noise, as well as health hazards from traffic decrease
Social	8. Accessibility of everyday services and jobs for those without a car improves 9. The cost of mobility does not restrict basic mobility
Land use	10. Land use solutions support walking and cycling 11. New land use is located within public transport city
Safety	12. Serious personal injury accidents decrease

Fig. 3. Key goals of HLJ 2011.

The 14 Helsinki region municipalities are home to about 1.34 million people and about 700,000 jobs (Fig. 4.). About one fourth of Finland's total population lives in the region. Helsinki Region Land Use, Housing and Transport Program (or MAL) and HLJ 2011 plan provide for a significant population growth. It is projected that the population will reach 1.8 million in 2050. In the traffic forecasts used in HLJ 2011, the region's population is estimated to grow by around 500,000 residents from 2008 to 2050, while the number of jobs is estimated to increase by 270,000 (Figures 5 and 6).

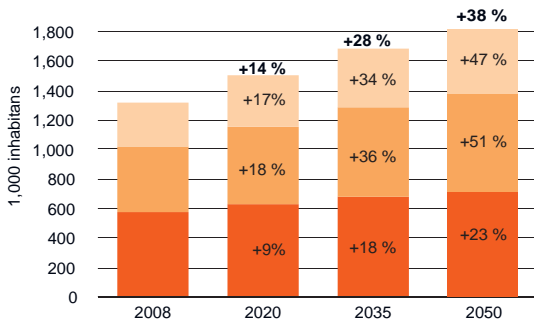


Fig. 5. Estimated population growth in the Helsinki region (14 municipalities) 2008-2050.

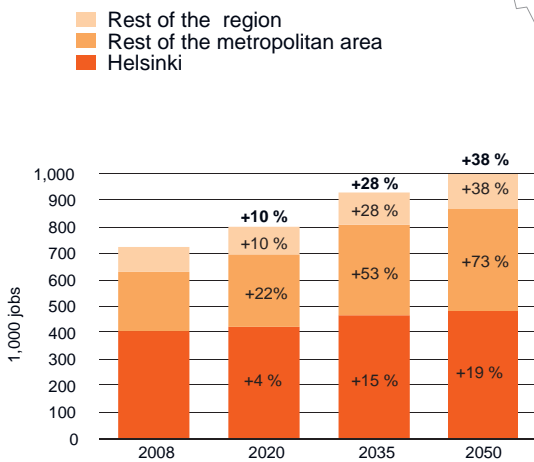
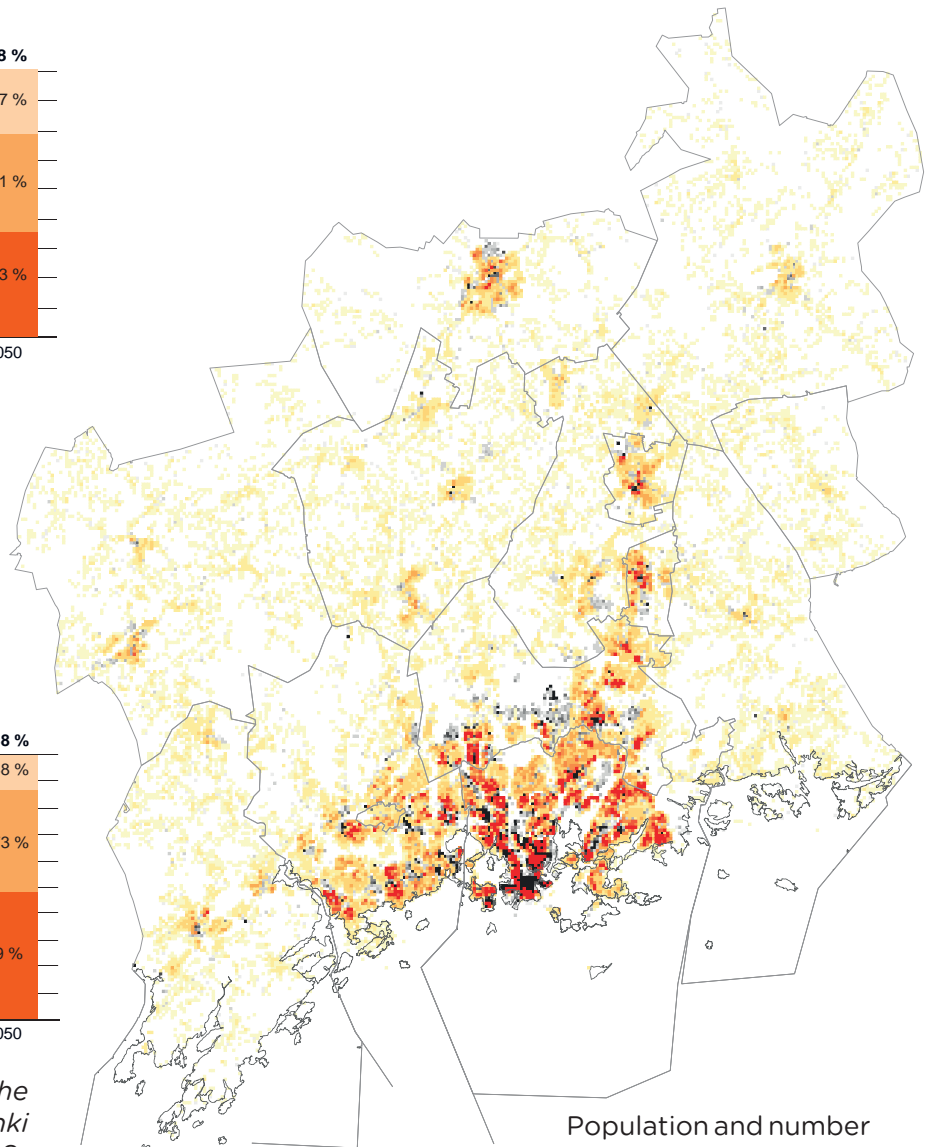


Fig. 6. Estimated change in the number of jobs in the Helsinki region (14 municipalities) 2008-2050.



Population and number of jobs 2008

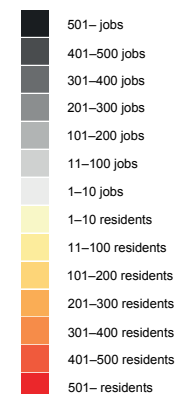


Fig. 4. Location of population and jobs in the Helsinki region in 2008 (population and job data © YKR SYKE and Statistics Finland).



Impact assessment of HLJ 2011

The impact assessment of HLJ 2011 supported the preparation of HLJ 2011 plan and the related interaction and decision-making (Figure 7). Impact assessments have been made on the basis of the starting point analysis and assessment plan of the impact assessment of HLJ 2011 (YTV Publications 22/2009). HLJ 2011 is a plan whose environmental impacts have to be assessed as stipulated in the Act on the Assessment of the Impacts of the Authorities' Plans and Programmes on the Environment, or SEA Act 200/2005.

The evaluation of alternatives and scenarios related to HLJ 2011 served the preparation of the plan and the impact assessment. The first evaluations were included in the Land use and rail network study (MARA) related to HLJ 2011, which determined the target rail network in the Helsinki region for 2050 and goal-oriented land use relying on the target network. The preparation of HLJ 2011 involved also scenario evaluations comparing so

called modest development (0+ alternative) and goal-oriented development without and with congestion charges. Different scenarios and development alternatives were examined using HSL's new traffic forecast model for the Helsinki region. Traffic-related key figures generated with the help of the model were utilized in the impact assessment. The analysis years were 2020 and 2035, as well as 2050 in terms of a general vision. The preparation of the plan involved also sensitivity analyses studying the significance of halt in motorization, major investments in public transport, substantial increase in walking and cycling, and implementation of land use plans in the 2035 situation.

The impacts of congestion charges have been studied in more detail in a study on Helsinki region congestion charges conducted under the direction of the Ministry of Transport and Communications (Helsinki Region Congestion Charges, Follow-up study, Ministry of Transport and Communications Publications 5/2011). The study was completed in February 2011.

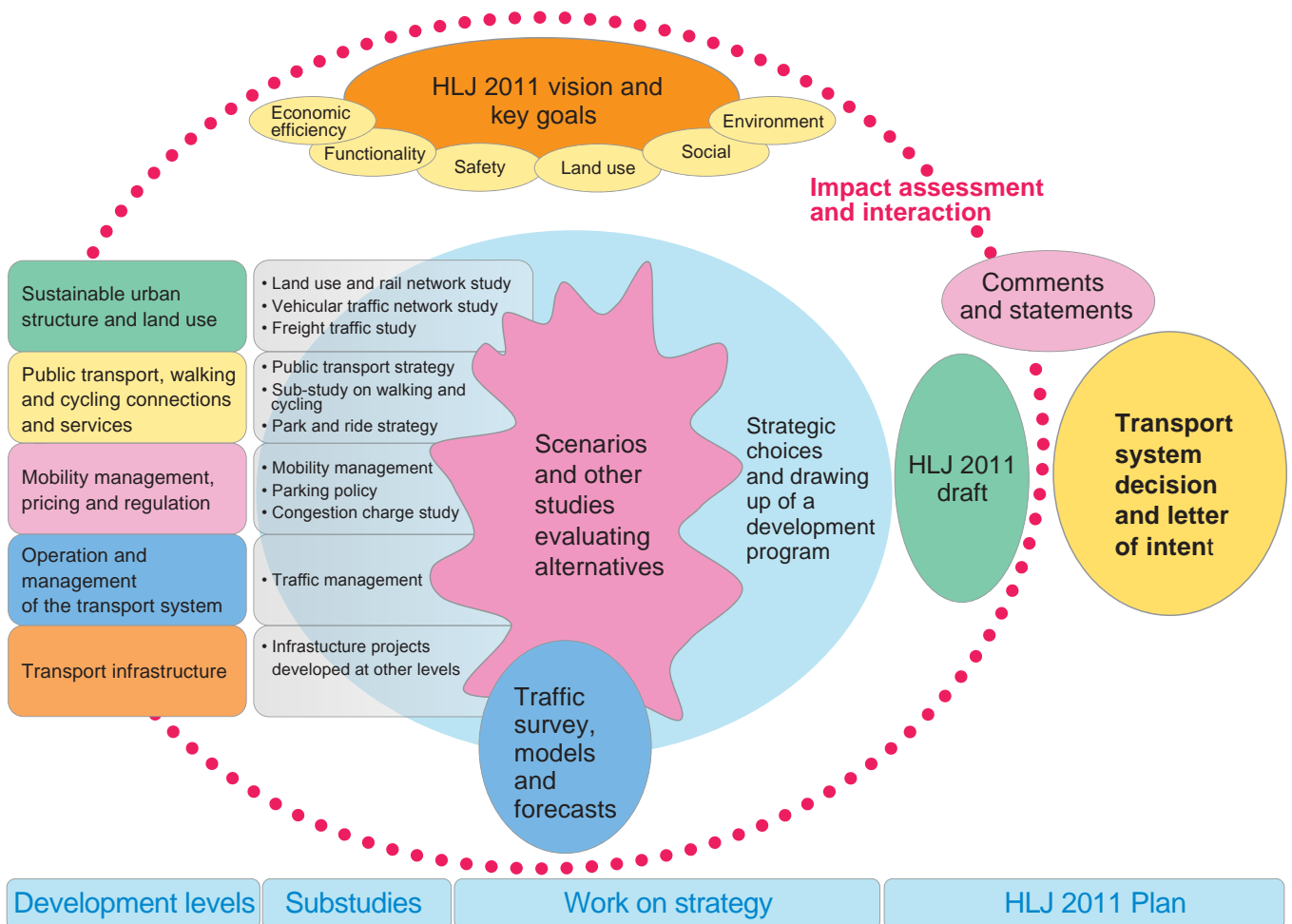


Fig. 7. HLJ 2011 preparation process and impact assessment.



Challenges and strategic questions of transport system development

Major challenges and problems related to the development of the transport system in the Helsinki region were identified and this served as a starting point for the preparation of HLJ 2011 (see the table on page 7). Sub-studies conducted for the purposes of the preparation of HLJ 2011 were utilized in the identification. The problems and challenges should be solved or alleviated in order to achieve the key goals of HLJ 2011. Urban sprawl underpins many of the challenges. If continued, it will weaken the chances of achieving many of the goals.

Transport system development: Challenges, threats and problems in achieving the key goals of HLJ 2011

Economic efficiency	<p>Key goal 1. The socio-economic efficiency of transport improves</p> <ul style="list-style-type: none"> • Car traffic volumes and performance increase, which increases the total cost of the transport system, travel time costs caused by congestion, and external costs of traffic (emissions, noise, accidents). <p>Key goal 2. The economic efficiency of public transport increases</p> <ul style="list-style-type: none"> • If there is no money to develop the public transport system, the economic efficiency of the entire transport system will not improve. • The urban sprawl continues. • The unit costs of maintaining and improving public transport service level increase.
Functionality	<p>Key goal 3. The competitiveness of public transport relative to the car improves</p> <ul style="list-style-type: none"> • On the majority of journeys, private car is a far more competitive option than public transport. <p>Key goal 4. Conditions for walking and cycling improve</p> <ul style="list-style-type: none"> • Conditions for walking and cycling do not improve sufficiently and their modal share does not increase. <p>Key goal 5. Congestion does not impede the movement of freight transport</p> <ul style="list-style-type: none"> • Impediments to freight transport caused by congestion increase.
Environment	<p>Key goal 6. Greenhouse gas emissions from traffic decrease on target</p> <ul style="list-style-type: none"> • Greenhouse gas emissions from traffic are not decreasing on target. <p>Key goal 7. Exposure to traffic emissions and noise, as well as health hazards from traffic decrease</p> <ul style="list-style-type: none"> • Exposure to traffic noise increases. • Small particles continue to be a problem.
Social	<p>Key goal 8. Accessibility of every day services and workplaces for those without a car improves</p> <ul style="list-style-type: none"> • The number of neighborhood services decreases and journeys to access services become longer. • Commuting distances increase and accessibility by public transport declines. <p>Key goal 9. The cost of mobility does not restrict basic mobility</p> <ul style="list-style-type: none"> • The cost of mobility is likely to increase. • Integration of the urban structure poses challenges (acceptability, functionality).
Land use	<p>Key goal 10. Land use solutions support the conditions for walking and cycling</p> <ul style="list-style-type: none"> • Land use development increases dependency on car. <p>Key goal 11. New land use is located within public transport city</p> <ul style="list-style-type: none"> • New land use is not allocated within the public transport city sufficiently. • The urban sprawl continues.
Safety	<p>Key goal 12. Serious personal injury accidents decrease</p> <ul style="list-style-type: none"> • There are too many serious traffic accidents.

During the impact assessment of HLJ 2011, strategic questions that have an impact on the development of the transport system in the Helsinki region were identified, among other things, on the basis of evaluation of alternatives. The strategic questions are:

- Will the future development of land use and transport system in the region be extensive, long-span and integrated or will it be cooperation based on smaller measures?
- Are land use and transport planned as an integrated whole and is there a will to actively affect urban sprawl in the region?
- Can the growth in the region continue without significant investments in the transport system and is it possible to make these investments without introducing congestion charges?
- Will the region remain attractive and competitive if the performance of its transport system falls?
- Do we accept congestion on the region's transport network or is influencing the transport demand made an integral part of the transport system?
- Will public transport be based on the development of rail transport and bus services and feeder solutions supporting it also in future or will the development of public transport be mainly based on bus services?
- Do we accept that the modal share of public transport decreases and motorization thus continues?
- How are the projects aimed at developing public transport and increasing road capacity for vehicle traffic prioritized over each other?
- Do we rely on advances in vehicle and fuel technology to solve the need for reducing greenhouse gases?





Impact assessment of the Draft HLJ 2011

The impacts of the draft transport system plan have been examined by comparing goal-oriented development as outlined in the Draft HLJ 2011 (26 October 2010) to the current state as well as to a so called alternative of modest development (O+). In the alternative of modest development, the transport system is developed on the basis of current needs by relatively small measures. In the alternative of goal-oriented development, the level of financing is higher and in addition to small measures also large investments, which affect a large population, are made.

Comparison of goal-oriented development and modest development

In the goal-oriented development, investments in transport open new regional and city-specific possibilities for town-planning to locate new construction in areas with good public transport accessibility. In this way, a range of regional development initiatives is formed in which the measures with quick impact and measures with longer term impact supplement each other.

With regard to the modest development, it is difficult to create a clear regional transport system development path out of the small measures. Modest development is reactive while goal-oriented development is proactive. However, the impacts of small measures emerge relatively quickly.

Alternative of modest development

In the alternative of modest development, which was used as a comparison for the Draft HLJ 2011, existing rail connections and bus services form the basis of the public transport system. The evaluation of alternatives shows that in the alternative of modest development the main problems remain. Journeys and journey times become longer and not only radial links but also transversal transport links are congested. It is not possible to significantly increase rail capacity from the present level because it is not possible to make investments

to increase the capacity due to scarce financing. The modal share of public transport decreases because bus services, which form the basis of the public transport system, are slowed down as the main roads become more congested. The risk is that public transport is not competitive relative to the car. Access to services is dependent on car use and motorization continues.

In the alternative of modest development, land use is concentrated in the catchment area of the current public transport network. The areas around stations along current railway lines and the catchment areas of the new stations along the West Metro and Ring Rail Line strengthen their position as attractive land use development areas. The present type public transport system which is based on bus services is not attractive enough to support integrated land use, nor does it enable areas with compact urban structure that are attractive in terms of transport in the neighboring municipalities. It is not possible to provide high enough public transport service level for new land use openings. Financing does not support wide scale implementation of an efficient trunk bus route network.

The attractiveness of the region and its parts will decrease due to reduced internal and external accessibility caused by increased journey times that result from congestion. New, strong public transport hubs or new, attractive employment areas based on public transport are not created. As the possibilities of making urban areas more compact diminish, growth occurs in the outskirts of built-up areas and outside the town plan area resulting in an increasingly dispersed urban structure. In land use development the emphasis is, on one hand, on internal growth and integration of existing urban areas in each municipality and, on the other hand, on scattered settlements. The risk is that urban sprawl in the region continues. The dispersed structure does not provide a basis for improving the energy efficiency of the transport system. The cost of transport increases if the price of fuel goes up.

Goal-oriented development

In the alternative of goal-oriented development, rail transport network and the trunk bus route network supporting it can be strengthened. Projects that are crucial for the performance of the national transport system and promotion of public transport, such as Pisara rail loop, improvement of Ring Road III, increasing the capacity of the main rail line and later on Airport Rail Link, can be implemented. Freight transport bottlenecks can be eliminated.

The development of rail transport enables a well-functioning transport system in the region also when the population and number of jobs increase. Rail corridors together with the areas around stations give form to the regional structure in the long-term. Development spreads over a wider area which contributes to decentralization in the catchment areas of the rail corridors. The development of rail transport, e.g. extending the Metro to the



west and east, creates possibilities for integrated land use and attracts new services and business activity. Strong public transport hubs are formed, and they support the integration of existing and new employment areas. Feeder services help to provide access to public transport trunk routes also from the fringes of urban areas.

Full exploitation of the possibilities of land use development related to rail corridors necessitates a strong regional will and guidance, e.g. concerning timing and reconciliation of the municipalities' plans. In terms of the goals, a crucial question is how much weight is put on the measures to develop public transport and cycling relative to increasing car traffic capacity. If we are able to reconcile land use and rail transport development in a desired way, we will have a good basis for integrated urban structure and possibilities to a car-free lifestyle improve also outside the region's core areas. An integrated structure is energy efficient and saves costs, should the price of fuel rise.

Impacts of congestion charges

The scenario evaluations show that congestion charges would have a substantial impact on the development of traffic volumes and modal shares. With the help of congestion charges it is possible to control the increase in traffic volumes, increase the modal share of public transport, reduce congestion, cut journey times and improve the economic efficiency of the transport system. Congestion charges contribute to the reduction of greenhouse gas emissions and other environmental hazards. Better flow of traffic improves accessibility and cuts travel time costs caused by congestion.

Congestions charges affect people's travel habits relatively quickly and encourage people to plan their daily travel in a reasonable manner. Congestion charges support the integration of the urban structure because they increase demand in areas with dense land use and curb the expansion of the region. Congestion charges together with the development of public transport create conditions for land use that favor cycling, walking and public transport. Allocation of revenue from congestion charges to the development, operation and maintenance of public transport contributes to the realization of the key goals of HLJ 2011.



Summary of the impacts of HLJ 2011

The vision and key goals of the Draft HLJ 2011 are widely realized through the development program (Table on page 17). As the impacts of the large-scale transport system development measures are slow to appear, differences between the development alternatives will be only partially discernible by 2020. For example, large rail investments have significant impacts on the development of the transport system and land use on the long-term in particular if the population of the region continues to grow. In terms of the realization of the vision and key goals, it is essential to integrate the land use and transport systems in the region and to develop them purposefully so that the region grows gradually and in a controlled manner based on the development of rail transport.

The measures outlined in the draft transport system plan improve the overall performance of public transport in particular due to the common ticketing system and the development of Park & Ride and public transport information services. The measures also make it possible to relieve the most significant shortages of rail transport capacity. The development program has a positive impact on the modal share of public transport especially in areas outside the metropolitan area (Figures 8 and 9). The speed of public transport improves relative to the car as congestion in the region increases.

The development of the scope and accessibility of the pedestrian city depends on the choices made regarding the planning and implementation of land use as well as on the service structure and location of services. Expansion of pedestrian areas is supported by infill development, making the mobility environments more pleasant, and development of local walking and cycling connections and networks. Making walking, cycling and public transport more attractive relative to the car enables land use solutions that support a car-free lifestyle.

The service level of freight transport remains at the current level despite increased traffic. Improvement of the road and rail infrastructure, implementation of freight transport service areas and development of road traffic monitoring, control and information have a positive impact on the performance of freight transport.

Regional competitiveness and the competitiveness of business and industry improve. In terms of town planning, transport investments open new possibilities for locating new construction in areas with good accessibility both at municipal and regional level. Through improved accessibility, the development program contributes to the economic competitiveness and attractiveness of the Helsinki region.

The cost of transport does not rise excessively. A joint public transport ticketing system

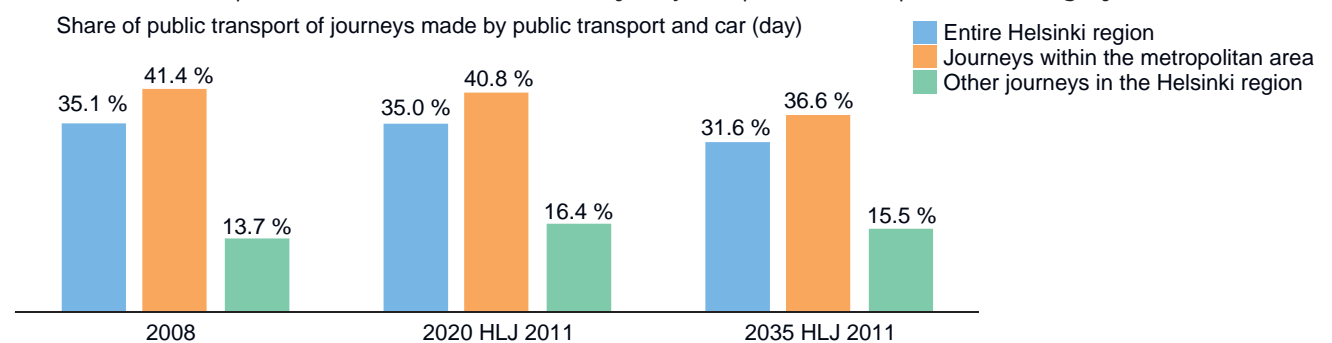


Fig. 8. Forecasted development of the modal share of public transport in the Helsinki region from 2008 to 2035.

reduces the cost of public transport for residents of the neighboring municipalities. The socio-economic costs of the transport system do not change substantially and differences between the development alternatives are rather minor. Further efforts are needed to promote traffic safety and noise abatement projects to address personal injury accidents and noise abatement. Ecological connections, impacts on landscape and cityscape, impacts on quiet areas, and impacts of traffic on air quality and exposure to air pollutants have to be taken into account in the further planning. Vehicle and fuel technology play an important role in achieving the climate targets but management of demand and supply is needed as well.

Forecasts of the numbers of public transport passengers and vehicle traffic volumes

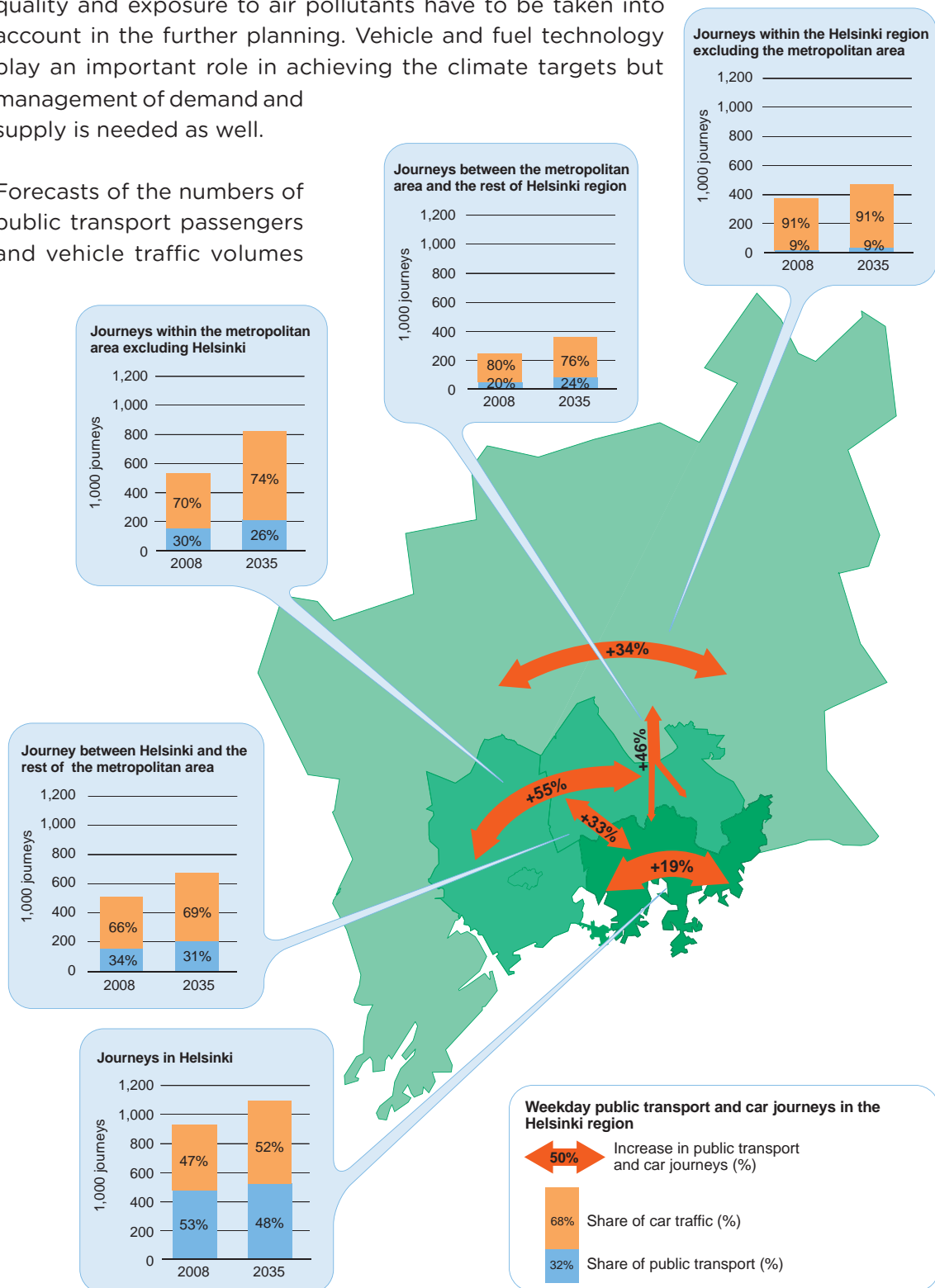


Fig. 9. Forecasted development of motorized journeys in the Helsinki region.

in the current situation (2008) and in the 2035 situation as outlined in the Draft HLJ 2011 are presented in Figures 10 and 11. Significant expansion of the rail transport system and switch from bus services to rail services are clear trends in public transport. In road

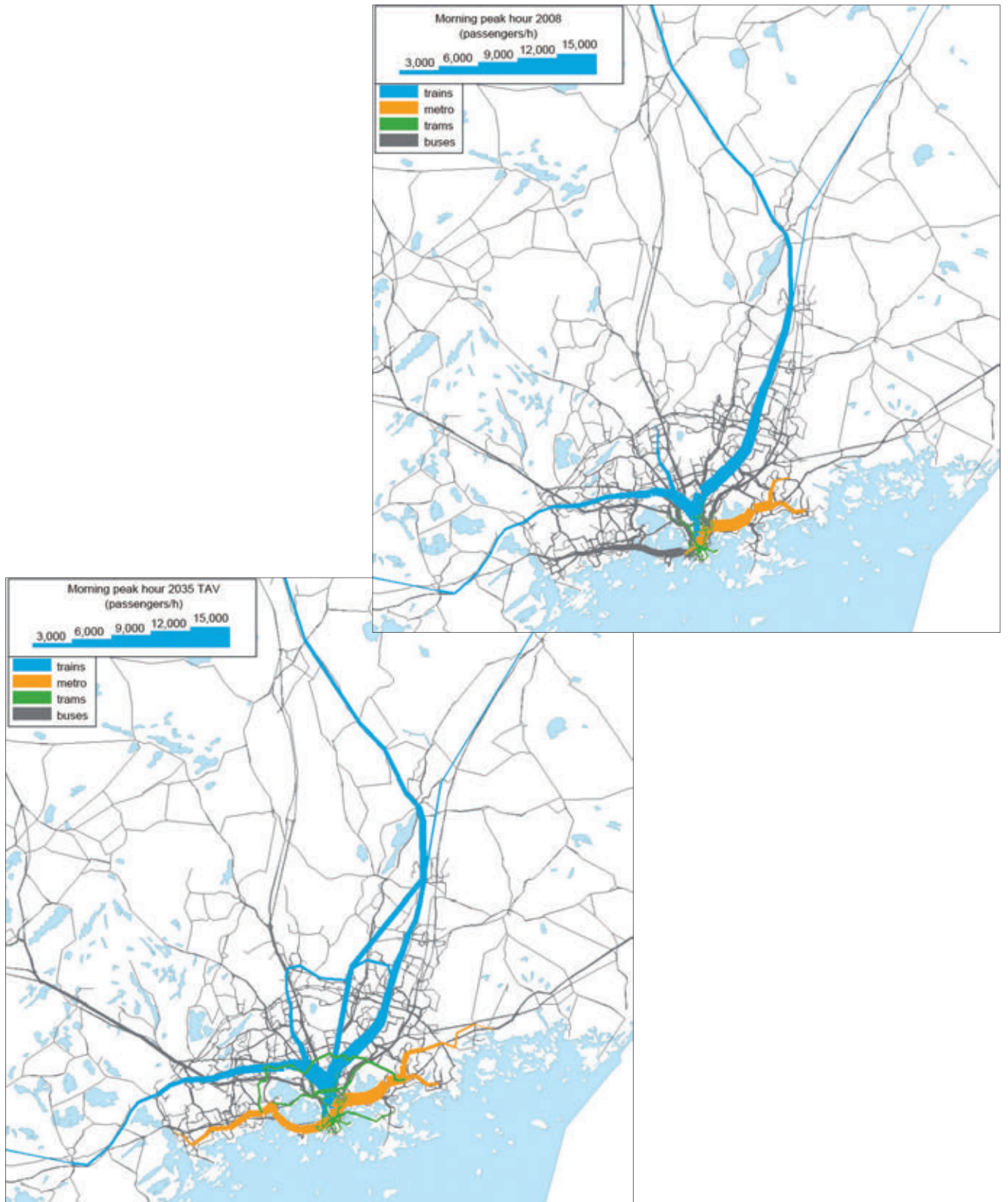


Fig. 10. Forecast of public transport passenger numbers in the morning peak in 2008 and 2035 (Draft HLJ 2011).

transport, strong growth in traffic volumes occurs more in the fringes of the metropolitan area.

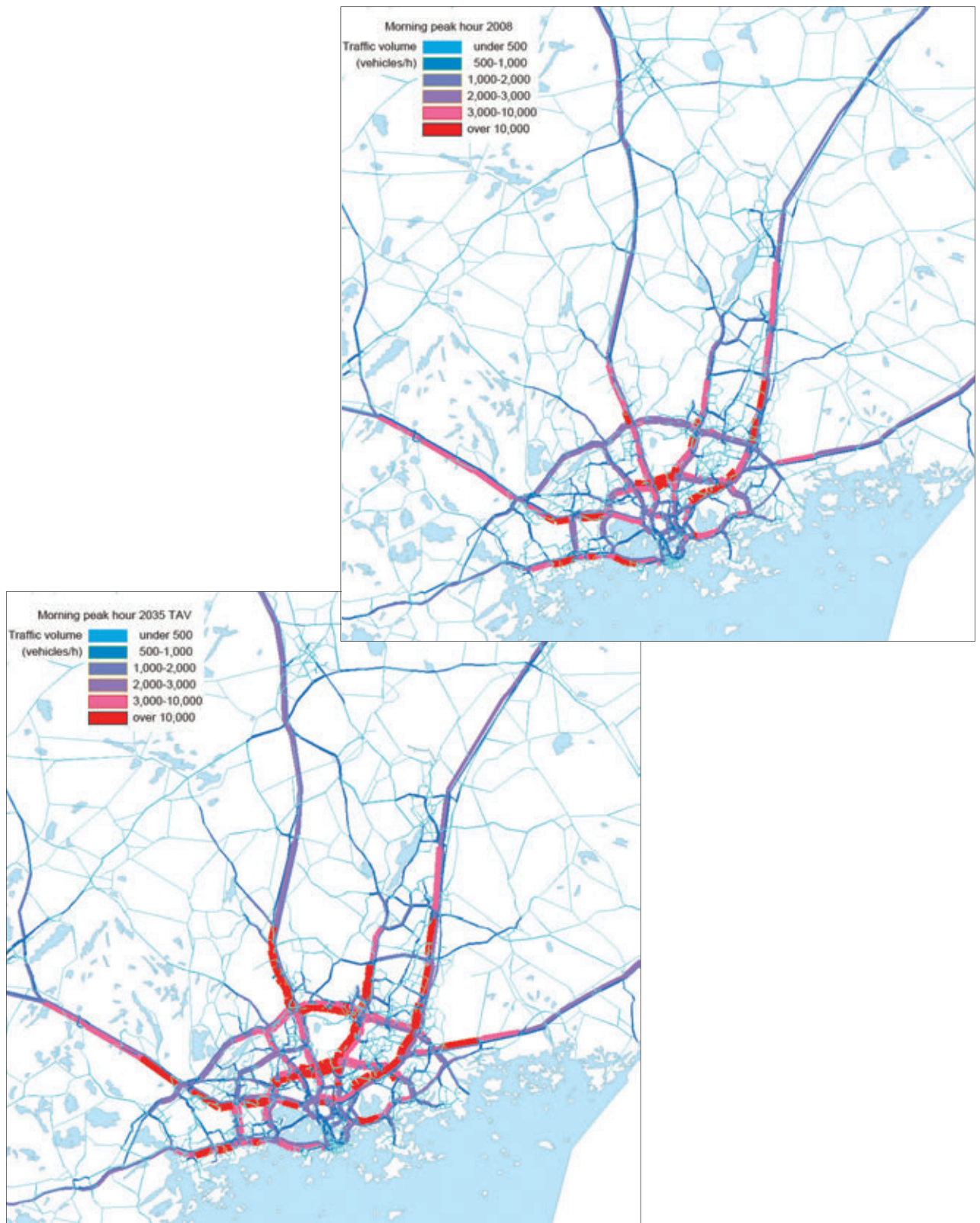


Fig. 11. Forecasted vehicle traffic volumes in the morning peak in 2008 and 2035 (Draft HLJ 2011).

Local environmental impacts of the Draft HLJ 2011 are presented in Figure 12. The Figure highlights projects that are located in waterway passages or in areas of scenic or cultural historical value at local or national level. Also other projects presented in the Draft HLJ 2011 have local impacts on landscape. Fragmentation of nature due to new roads and routes affects both ecological connections and areas deemed quiet. Barriers caused by roads and routes can be removed by structural means and by taking ecological connections into account in town planning. Need for noise protection increases as traffic volumes increase both in the alternative of modest development and of target-oriented development.

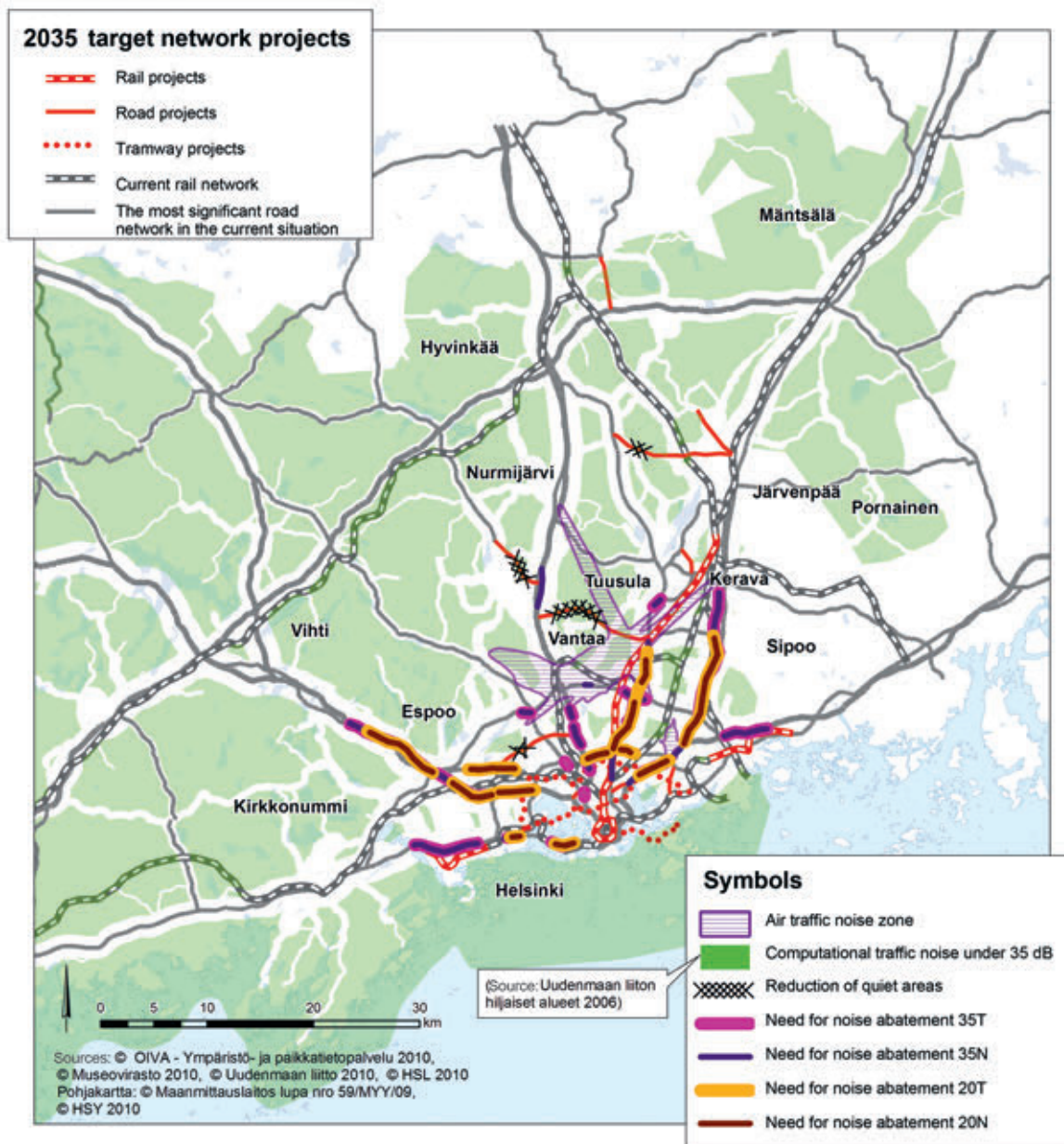


Fig. 12. Local environmental impacts that have to be reckoned with in the further planning (noise, quiet areas, landscape protection and ecological connections). Need for noise abatement increases along the current roads and routes. Quiet areas decrease as new roads are constructed. The need for noise abatement is presented in 2020 and 2035 for the scenarios of modest and target-oriented development (20N, 20T, 35N and 35T).

Summary of the impacts of HLJ 2011		
Sub-vision	Key goal	Realization of the goal
Economic efficiency	Key goal 1. The socio-economic efficiency of transport improves.	<ul style="list-style-type: none"> Regional competitiveness and the competitiveness of business and industry improve. Per capita socio-economic costs do not change substantially although investments are made in public transport.
	Key goal 2. The economic efficiency of public transport improves.	
Functionality	Key goal 3. The competitiveness of public transport relative to the car improves.	<ul style="list-style-type: none"> Positive impact on the modal share of public transport especially in areas outside the metropolitan area. The relative speed of public transport does not change. The overall performance of public transport improves. The most significant shortages in rail transport capacity are removed. The service level of Park and Ride improves. Supports the expansion of the pedestrian city. Walking and cycling networks improve. Travel times in freight transport remain at the current level. Traffic-related bottlenecks in freight transport are removed.
	Key goal 4. Conditions for walking and cycling improve.	
	Key goal 5. Congestion does not impede the movement of freight transport.	
Environment	Key goal 6. Greenhouse gas emissions from traffic will decrease on target.	<ul style="list-style-type: none"> The 2020 national target (-15% from 2005 levels) is not achieved. The 2030 target for the metropolitan area (-20% from 1990 levels) is reached. Achievement of the 2050 target set out in the Government Foresight Report (-80% from 1990 levels) is possible. Exposure to emissions affecting health decreases. Exposure to noise increases. Number of quiet areas is not extensively threatened.
	Key goal 7. Exposure to traffic emissions and noise, as well as health hazards from traffic decrease.	
Social	Key goal 8. Accessibility of every day services and workplaces for those without a car improves.	<ul style="list-style-type: none"> The pedestrian and public transport city expands. Accessibility of services and workplaces for those without a car improves. Development of motorization is differentiated within the region. The cost of transport relative to disposable income does not rise excessively.
	Key goal 9. The cost of mobility does not restrict basic mobility.	
Land use	Key goal 10. Land use solutions support the conditions for walking and cycling.	<ul style="list-style-type: none"> The pedestrian and public transport city expands as land use develops in line with the basic policy definition. Calls for determined regional and city-specific policy definitions.
	Key goal 11. New land use is located within public transport city.	
Safety	Key goal 12. Serious personal injury accidents decrease.	<ul style="list-style-type: none"> The scheme improves traffic safety slightly but not sufficiently.
Other environmental effects		<ul style="list-style-type: none"> Preservation of key natural areas and protected areas, landscape and cityscape factors and ecological connections have to be taken into account in the further planning.

The impacts of the Draft HLJ 2011 have been illustrated with the help of seven fictitious persons and a school. Figure 13 shows possible impacts of transport system development on the model persons' transport options.

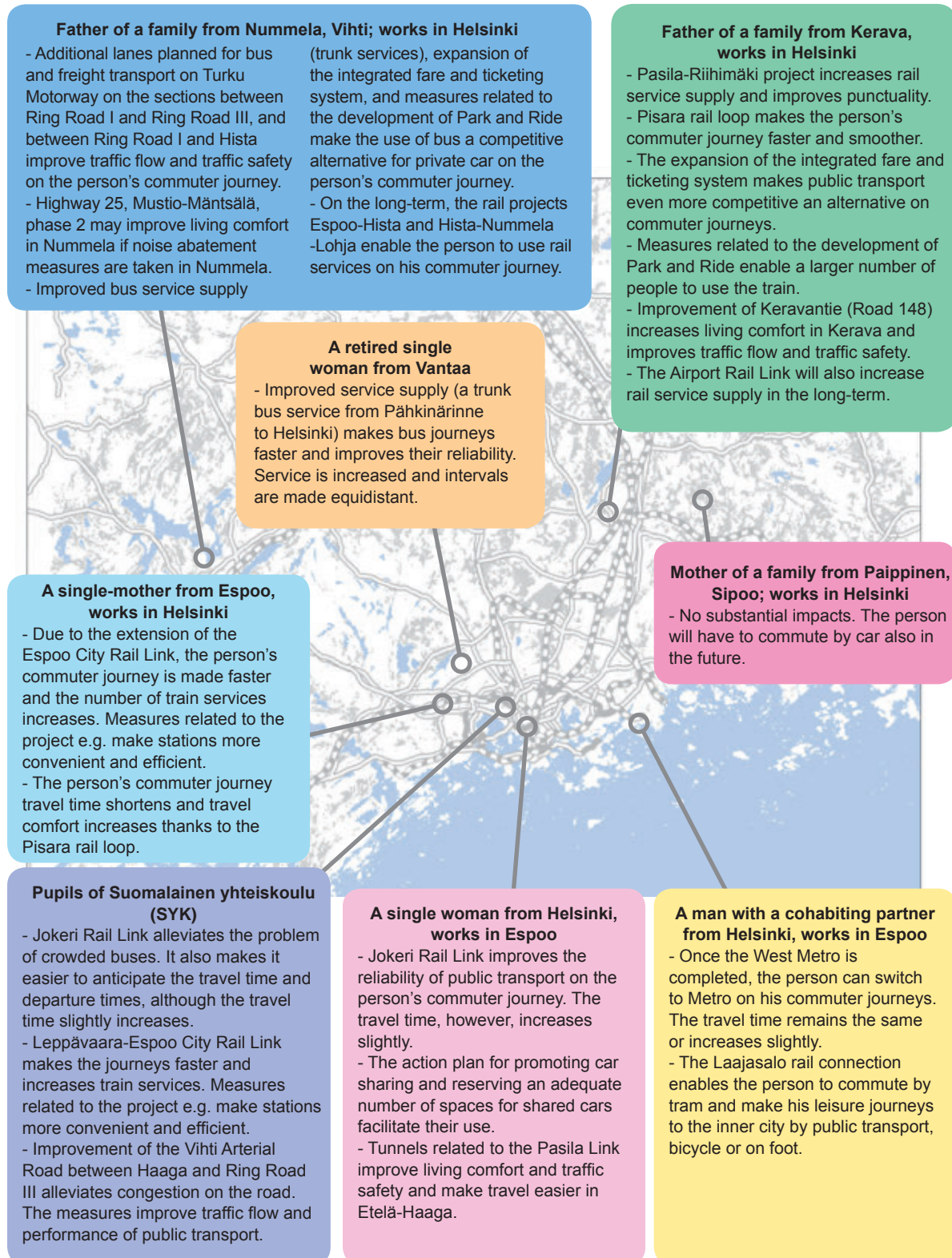


Fig. 13. Possible impacts of transport system development on the model persons' transport options.



HLJ publications

HLJ Reports

HLJ 2011 Framework Program, June 2008

Transport system level means for combating climate change, Tool kit - A preliminary study, YTV's Publications 22/2008

Helsinki Region Congestion Charges, Ministry of Transport and Communications Publications 30/2009

HLJ 2011 Interaction Plan, June 2009

HLJ 2011 Scenarios for the future, June 2009

Starting point analysis and assessment plan of the impact assessment of HLJ 2011, YTV's Publications 22/2009

Possibilities of vehicle and fuel technology in reducing emissions from car traffic, YTV's Publications 28/2009

Land use and rail network study MARA, HSL's Publications 9/2010

Workshop on parking policy in the Helsinki region 19 April 2010, a set of Powerpoint presentation of the key results of the workshop, April 2010

Traffic and mobility management in HLJ 2011, a set of Powerpoint presentation the main results of the sub-study, April 2010

Monitoring of urban structure development and conditions for different modes of transport in the Helsinki region, HSL's Publications 21/2010

Public Transport Strategy, HSL's Publications 22/2010

Review on the current state, development views and problems of freight traffic in the Helsinki region and Uusimaa, HSL's Publications 23/2010

Walking and cycling in the Helsinki region, HSL's Publications 24/2010

Vehicular traffic network study, HSL's Publications 28/2010

Scenario evaluations, reported as part of HLJ 2011 Impact Assessment

Helsinki Region Congestion Charges. Follow-up study, Ministry of Transport and Communications Publications 5/2011

Helsinki Region Transport System Plan (HLJ 2011) Impact Assessment, HSL's Publications 5 /2011

Helsinki Region Transport System Plan (HLJ 2011), HSL's Publications 14/2011

HLJ Reviews

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Helsinki Region Transport System Plan (HLJ 2011) Framework Program (HLJ Review 1/2009)

Current state of traffic (HSL Review 2/2009)

Scenarios for the future (HLJ Review 3/2009)

Vision and strategy framework (HSL Review 4/2009)

Interaction and impact assessment in the preparation of HLJ 2011 (HLJ Review 5/2009)

Preparation status of HLJ 2011 in autumn 2009 (HLJ Review 6/2009)

2010

Preparation status of the Helsinki Region Transport System Plan (HLJ 2011) (HLJ Review 1/2010)

Extensive Traffic Survey (LITU 2008) and use of traffic models in the preparation of HLJ 2011 (HLJ Review 2/2010)

Public Transport Strategy (HLJ Review 3/2010)

Walking and cycling in the Helsinki region (HLJ Review 4/2010)

Mobility and traffic management in HLJ 2011 (HLJ Review 5/2010)

Freight traffic in the Helsinki region (HLJ Review 6/2010)

Parking policy study (HLJ Review 7/2010)

Vehicular traffic network study (HLJ Review 8/2010)

Land use and rail network study MARA (HLJ Review 9/2010)

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- 1/11 HLJ 2011 HLJ 2011, Impact Assessment, Abstract*
- 2/11 HLJ 2011 Helsinki Region Transport System Plan HLJ 2011, Abstract*
- 1/10 HLJ 2011 Preparation status of the Helsinki Region Transport System Plan (HLJ 2011)*
- 2/10 HLJ 2011 Extensive Traffic Survey (LITU 2008) and use of traffic models in the preparation of HLJ 2011*
- 3/10 HLJ 2011 Public Transport Strategy*
- 4/10 HLJ 2011 Walking and cycling in the Helsinki region*
- 5/10 HLJ 2011 Mobility and traffic management in HLJ 2011*
- 6/10 HLJ 2011 Freight traffic in the Helsinki region*
- 7/10 HLJ 2011 Parking policy study*
- 8/10 HLJ 2011 Vehicular traffic network study*
- 9/10 HLJ 2011 Land use and rail network study MARA*
- 1/09 HLJ 2011 Helsinki Region Transport System Plan (HLJ 2011) Framework Program*
- 2/09 HLJ 2011 Current state of traffic*
- 3/09 HLJ 2011 Scenarios for the future*
- 4/09 HLJ 2011 Vision and strategy framework*
- 5/09 HLJ 2011 Interaction and impact assessment in the preparation of HLJ 2011*
- 6/09 HLJ 2011 Preparation status of HLJ 2011 in autumn 2009*

The Impact Assessment of HLJ 2011 and other HLJ publications are available (in Finnish) online at www.hsl.fi/hlj.

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